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Non Invasive Imaging

THE NEED FOR STANDARDIZED METHODS FOR MEASURING THE AORTA: EXPERIENCE FROM THE NATIONAL REGISTRY OF GENETICALLY TRIGGERED THORACIC AORTIC ANEURYSMS (GENTAC)

Poster Contributions
Hall C
Sunday, March 30, 2014, 3:45 p.m.-4:30 p.m.

Session Title: Non-Coronary Cardiac CT
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Background: In patients with aortic aneurysms, standardization of the procedures for performance of aortic measurements (AM) is lacking. To better characterize the diversity of methods utilized in clinical practice, we compared AM performed at the 6 GenTAC enrolling centers (EC) to those performed at the GenTAC Imaging Core lab (ICL) in 965 cases.

Methods: Clinical reports of AM by Echo, computed tomography (CTA) or magnetic resonance (MRI) were collected. Each EC acquired and analyzed their images according to local protocols. Images were subsequently blindly analyzed by the ICL based on a unified protocol for all imaging modalities and age groups. AM at pre-specified levels were performed at end systole (whenever gated) with an inner edge to inner edge technique. Paired measurements from EC and ICL were compared by mean of differences and intra-class correlation coefficient (ICC).

Results: For the proximal segments of the aorta echo showed a higher ICC and smaller mean of differences than CTA and MRI, while MRI showed higher ICC for the arch and descending aorta (table). In a mixed model adjusting for other variables, comparison of mean of differences and ICC for CTA vs MRI vs echo showed a significant difference ($p<0.05$) between modalities. Similar difference was observed when comparing EC but not comparing age groups.

Conclusion: Our findings emphasize the lack of measuring consistency and the clinical need of a standardized method to be applied in all imaging modalities and clinical centers.

	CTA		Echocardiography		MRI	
	Mean of diff (cm)	ICC	Mean of diff (cm)	ICC	Mean of diff (cm)	ICC
AV Annulus	-0.19	0.44	-0.04	0.84	0.42	0.69
Sinus of Valsalva	-0.29	0.84	0.05	0.93	-0.04	0.90
Sino-Tubular Junction	0.17	0.80	<-0.01	0.91	0.22	0.72
Ascending aorta	0.10	0.84	-0.02	0.92	0.12	0.82
Transverse Arch	-0.12	0.75	0.08	0.71	-0.02	0.91
Isthmus	0.47	0.73	-0.04	0.70	-0.26	0.95
Descending Thoracic	0.01	0.85	<-0.01	0.70	<0.01	0.93
Infra-renal	0.14	0.86	.	.	-0.29	0.43